

ART 34 Amended

What is claimed:

2. A method for infrared spectral imaging of a sample using a spectrometer and a sensor, comprising the steps of:
 - a) selecting a scanning speed of the spectrometer;
 - 5 b) causing the spectrometer to scan the sample with infrared light;
 - c) triggering the detector to measure absorption of light by the sample upon starting the scan; and
 - d) repeating steps (b)-(c) a predetermined number of times.
- 10 3. The method of claim 2 wherein the sample comprises a combinatorial library.
4. The method of claim 3 further comprising forming the combinatorial library with discrete quantities of a plurality of different samples.
- 15 5. The method of claim 3 wherein the sensor comprises a focal plane array.
6. The method of claim 5 wherein the spectrometer includes an interferometer.
7. The method of claim 6 wherein the spectrometer includes optical lenses suitable for use in the IR spectral range.
- 20 8. The method of claim 7 wherein the combinatorial library is transparent to infrared radiation.
9. The method of claim 7 wherein the combinatorial library is in contact with a substrate reflective of infrared light.
- 25 10. The method of claim 7 wherein the sample is in contact with an infrared transparent prism with a refractive index higher than the sample.

11. The method of claim 7 wherein the lenses comprise material selected from the group consisting of calcium flouride (CaF_2), zinc selenide (ZnSe), and germanium (Ge).

- 5 12. A method for evaluating a plurality of different samples comprising:
- forming a library of discrete quantities of the plurality of different samples, placing the library in the sample chamber of a spectrometer, the spectrometer comprising a source of infrared light, an interferometer, and a focal plane array,
- 10 selecting a scanning speed of the spectrometer, causing the spectrometer to scan the library with infrared light at predetermined time intervals,
- detecting the infrared light absorbed by the library with the focal plane array at the predetermined time intervals,
- 15 wherein spatially resolved time series of absorbance spectra of the library are determined.

13. The method of claim 12 wherein:

the spectrometer comprises focusing and condensing optics comprising at least one lens suitable for use in the IR spectral range.

- 20 14. The method of claim 12 further comprising:
- exposing the library to controlled conditions while illuminating the library with infrared light to evaluate the plurality of samples under the controlled conditions.

- 25 15. The method of claim 14 further comprising:
- assigning one or more time series of absorbance spectra to each of the different samples of the library,
- evaluating the different samples based on the assigned absorbance spectra.

16. The method of claim 12 wherein the at least one lens comprises material selected from the group consisting of calcium fluoride (CaF_2), zinc selenide (ZnSe), and germanium (Ge).

5 17. A method for evaluating a plurality of different samples comprising:
forming a library of discrete quantities of the plurality of different samples,
exposing the library to controlled conditions,
obtaining time series of absorbance spectra of the samples in the library
while exposing the library to the controlled conditions by:

10 (a) causing a spectrometer to illuminate the library with infrared light at a constant scanning speed, the spectrometer comprising a source of infrared light, an interferometer, focusing optics, condensing optics, and a focal plane array,

15 (b) detecting the infrared light absorbed by the library with the focal plane array

(c) determining absorbance spectra for each of the samples in the library from the detected infrared light

(d) repeating (a) through (c) a predetermined number of times.

20 18. The method of claim 17 wherein:
the focusing and condensing optics comprise at least one lens suitable for use in the IR spectral range.

19. The method of claim 18 wherein the at least one lens comprises materials selected from the group consisting of calcium fluoride (CaF_2), zinc selenide (ZnSe), and germanium (Ge).

25 20. The method of claim 19 further comprising:
selecting a desired spectral region,
employing a filter to only allow light from the selected spectral region to be collected.

5

5

5

5

5

10

10

15

15

15

15

15

15

24. The method of claim 23 wherein the spectrometer includes condensing optics to focus the infrared light on the detector, the detector comprising a focal plane array.

5 25. The method of claim 24 wherein the spectrometer includes optical lenses suitable for use in the IR spectral range.

26. The method of claim 25 wherein the lenses comprise material selected from the group consisting of calcium flouride (CaF_2), zinc selenide (ZnSe), and germanium (Ge).